



**UNITED STATES DEPARTMENT OF COMMERCE**  
**Pat nt and Trademark Offic**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/618,044 07/17/00 POMPETZKI

W 9350-0169-0

022850 HM12/0829  
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EXAMINER

PRICE

ART UNIT

PAPER NUMBER

1621

DATE MAILED:

08/29/01

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trad marks**

# Office Action Summary

Application No.

09/618,044

Applicant(s)

POMPETZKI ET AL.

Examiner

Elvis O. Price

Art Unit

1621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

### **DETAILED ACTION**

Claims 1-3 and 5-15 are pending in the application.

#### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

#### ***Information Disclosure Statement***

The information disclosure statement filed complies with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609. It has been placed in the application file and the information referred to therein has been considered as to the merits.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-3, 5, 6 and 9-15 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for hydrogenation reactions which utilize hydrogenation catalysts comprising copper, chromium, ruthenium or nickel on a neutral support, does not reasonably provide enablement for all types of hydrogenation catalysts. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

For rejections under 35 U.S. C. 112, first paragraph, certain factors must be considered under the holding in In re Wands, 8 USPQ2d 1400, 1404 (CAFC, 1988): 1)

Art Unit: 1621

the nature of the invention is that of hydrogenating acetone to produce isopropanol using hydrogenating catalyst; 2) the state of the prior art of hydrogenating acetone to produce isopropanol, in the presence of hydrogenating catalyst is known; 3) claims 1-3, 5, 6 and 9-15 are of such scope as to include all hydrogenation catalysts; 4) the level of ordinary skill of those in the art is high; 5) the level of predictability within the art is low because catalyst behavior in general is unpredictability; 6) the amount of direction or guidance presented by the inventor(s) is directed only to a hydrogenation reaction in which a nickel containing catalyst on neutral support is present; 7) there is one working example; 8) thus, an undue quantity of experimentation is necessary to use the invention based on the content of the disclosure.

Applicants are not enabled for any and every type of hydrogenation reaction inclusive of any and every possible hydrogenation catalyst. The Examiner asserts that applicants will agree that not all hydrogenation catalyst will render an isopropanol product containing minimal by-products as presently claimed.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 and 5-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuhara et al. {U.S. Pat. 5,081,321}, in view of Hiles et al. {U.S. Pat. 4,626,604}.

Applicants claim a process for the hydrogenation of acetone, which comprises: conducting the liquid-phase hydrogenation of acetone having a water content of less than or equal to 1.0% by weight in at least two hydrogenation process stages, thereby preparing isopropanol product.

Fukuhara et al. teach a process for the hydrogenation of acetone, which comprises conducting the liquid-phase hydrogenation of acetone in a reactor to produce isopropanol, in which a nickel containing catalyst supported on neutral alumina may be utilized as the hydrogenation catalyst and the reaction temperature is from room temperature to 200<sup>0</sup> C and reaction pressure is from 2 to 50 bar (Col. 2, lines 20-40). The conversion and the yield of the isopropanol is 99.9%, respectively (see Example 1). The difference between applicants' claimed invention and the Fukuhara et al. invention is that the Fukuhara et al. reference is silent about multiple hydrogenation stages, the percentage of water contained in the acetone substrate and the percentage of by-products, if any.

Hiles et al. generally teach the unsaturated organic compounds, including acetone, can be hydrogenated to the corresponding product (isopropanol from acetone) utilizing multi-stage hydrogenation reactions (Col. 5, lines 14-45 and Col. 7, lines 50-59). Hiles et al. employ the multi-stage hydrogenation process to affect a greater conversion of the unsaturated organic compound to be hydrogenated to the corresponding product (see abstract)

It would have been *prima facie* obvious to one of ordinary skill in the art to prepare isopropanol by hydrogenating acetone as presently claimed, because Fukuhara

Art Unit: 1621

et al. teach that acetone can be hydrogenated, in the liquid-phase, to produce isopropanol and Hiles et al. teach that compounds such as acetone can be hydrogenated in a multi-stage hydrogenation process. Since Fukuhara et al. are silent about any water contained in the acetone to be hydrogenated, the Examiner assumes that it is the same as presently claimed, absent evidence to the contrary.

One of ordinary skill in the art desiring to prepare highly pure isopropanol (more pure than that cited in the Fukuhara et al. reference) would have been motivated, in view of the Hiles et al. teachings, to incorporate additional hydrogenation stages, so as to optimize the total conversion of the isopropanol product, because it is known in the art that acetone can be hydrogenated to isopropanol using a multi-stage hydrogenation process. The instantly claimed process would therefore have been obvious to one of ordinary skill in the art.

### ***Response to Arguments***

Applicant's arguments filed 6/21/01 have been fully considered but they are not persuasive.

Applicants argue that the prior art does not teach or suggest conducting the hydrogenation of acetone in at least two hydrogenation process stages in which the water content in the acetone to be hydrogenated is less than or equal to 1% by weight.

This argument is not convincing considering that the prior art is silent with respect to the amount of water contained in the acetone to be hydrogenated. Thus, there is no reason for the Examiner to assume that the prior art is utilizing acetone containing water greater than 1% by weight. The argument concerning the usage of at

Art Unit: 1621

least two hydrogenation process stages, while conducting the hydrogenation of acetone, is not convincing, absence any unexpected results, because the additional hydrogenation process stages do not exhibit any unobvious feature over the prior art. The employment of multiple hydrogenation stages in the hydrogenation of hydrogenateable materials is standard in the art.

Applicants have submitted a signed Declaration, containing experimental data, in an attempt to demonstrate that the content of water in the hydrogenation of acetone by the process of the presently claimed invention has a material impact upon the composition of the final isopropanol product. The Examiner has considered the Declaration and notes, however, that the difference in the percent composition of the isopropanol in experiments A-J is of degree. Therefore, when considering the high conversion and yield percentage (99.9%, respectively) of the isopropanol product cited in the Fukuhara et al. reference, there is no reasonable reason for the Examiner to expect that the invention of Fukuhara et al. does not produce the same or better product results (the same or less by-product formation) than that of the presently claimed process.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elvis O. Price whose telephone number is 703 605-1204. The examiner can normally be reached on 8:30 am to 5:00 pm; Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann R. Richter can be reached on 703 308-4532. The fax phone

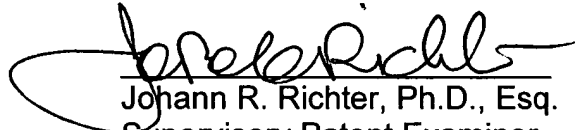
Art Unit: 1621

numbers for the organization where this application or proceeding is assigned is 703 308-4556 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-1235.

Elvis O. Price, Ph.D.

August 23, 2001



Johann R. Richter, Ph.D., Esq.  
Supervisory Patent Examiner  
Technology Center 1600